Freeform Search

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L41	(magnetic adj resonance) or nmr or mri	247240	L41
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L23	'5515855'.pn.	1	L23
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DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ			
L21	L19 and dome	26	L21
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L6	L5 and circuit	548805	L6
L5	(resonator or transmitter or receiver or transceiver)	1301571	L5
L4	(magnetic adj resonance) or nmr or mri	247240	L4
L3	(magnetic adj resonance) or nmr or mri	247240	L3
L2	(magnetic adj resonance) or nmr or mri	247240	L2
L1	(Fetzner) and cabinet	4	L1

END OF SEARCH HISTORY

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Search Results - Record(s) 1 through 16 of 16 returned.

1. Document ID: US 6898454 B2 Relevance Rank: 65

L39: Entry 2 of 16 File: USPT May 24, 2005

US-PAT-NO: 6898454
DOCUMENT-IDENTIFIER: US 6898454 B2

TITLE: Systems and methods for evaluating the urethra and the periurethral tissues

DATE-ISSUED: May 24, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Atalar; Ergin	Columbia	MD		
Quick; Harald Hartmann	Essen-Werden			DE
Karmarkar; Parag	Elliot City	MD		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
The Johns Hopkins University	Baltimore	MD			02
Surgi-Vision, Inc.	Marietta	GA			02

APPL-NO: 09/824536 [PALM]
DATE FILED: April 2, 2001

PARENT-CASE:
REFERENCE TO RELATED APPLICATIONS This application claims the benefit of U.S. Provisional Patent Application No. 60/194,060 filed Mar. 31, 2000, and is a continuation-in-part of U.S. patent application Ser. No. 09/536,090 filed Mar. 24, 2000 now U.S. Pat. No. 6,675,033, and Ser. No. 09/549,921 filed Apr. 14, 2000 now U.S. Pat. No. 6,549,800, which itself is a continuation-in-part of U.S. patent application Ser. No. 09/360,144, filed Jul. 26, 1999 now abandoned, which is continuation-in-part of U.S. patent application Ser. No. 08/638,934, filed Apr. 25, 1996, now U.S. Pat. No. 5,928,145. This application is also a continuation-in-part of U.S. application Ser. No. 09/191,563 filed Nov. 13, 1998 now U.S. Pat. No. 6,263,229, and Ser. No. 09/817,893 filed Mar. 26, 2001 now U.S. Pat. No. 6,628,980. The entire disclosure of each of these applications is herein incorporated by reference.

INT-CL-ISSUED: [07] A01B 5/05

INT-CL-CURRENT:
TYPE IPC DATE

ATTY-AGENT-FIRM: Foley Hoag LLP Kamholz; Scott E.

ABSTRACT:

The present invention provides systems and methods for the evaluation of the urethra and periurethral tissues using an MRI coil adapted for insertion into the male, female or pediatric urethra. The MRI coil may be in electrical communication with an interface circuit made up of a tuning-matching circuit, a decoupling circuit and a balun circuit. The interface circuit may also be in electrical communication with a MRI machine. In certain practices, the present invention provides methods for the diagnosis and treatment of conditions involving the urethra and periurethral tissues, including disorders of the female pelvic floor, conditions of the prostate and anomalies of the pediatric pelvis.

62 Claims, 27 Drawing figures

☐ 2. Document ID: US 6873156 B2 Relevance Rank: 64

L39: Entry 3 of 16 File: USPT Mar 29, 2005

US-PAT-NO: 6873156
DOCUMENT-IDENTIFIER: US 6873156 B2

TITLE: Method and apparatus for performing neuroimaging

DATE-ISSUED: March 29, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ferris; Craig F.	Holden	MA		
King; Jean A	Worcester	MA		
Allard; Arthur C.	Templeton	MA		
Ludwig; Reinhold	Paxton	MA		
Bogdanov; Gene	Manchester	CT		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Insight Neuroimaging Systems, LLC	Worcester	MA			02

APPL-NO: 10/365952 [PALM]
DATE FILED: February 13, 2003

PARENT-CASE:
CROSS REFERENCE TO RELATED APPLICATIONS This application is a divisional application of U.S. patent application Ser. No.: 09/694,087, filed Oct. 20, 2000, now U.S. Pat. No. 6,711,430 which is a continuation-in-part of U.S. patent application Ser. No. 09/073,546, filed on May 6, 1998, now abandoned both of which are hereby incorporated by reference in their entirety.

19 Claims, 41 Drawing figures

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3. Document ID: US 6501274 B1 Relevance Rank: 64

L39: Entry 8 of 16 File: USPT Dec 31, 2002

US-PAT-NO: 6501274
DOCUMENT-IDENTIFIER: US 6501274 B1

TITLE: Magnetic resonance imaging system using coils having paraxially distributed transmission line elements with outer and inner conductors

DATE-ISSUED: December 31, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ledden; Patrick	Malden	MA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Nova Medical, Inc.	Wakefield	MA			02

APPL-NO: 09/684680 [PALM]
DATE FILED: October 7, 2000

PARENT-CASE:
RELATED APPLICATIONS The applicant herein claims the benefit of U.S. Provisional Patent Application No. 60/159,662, dated Oct. 15, 1999 for HIGH RESOLUTION MAGNETIC RESONANCE IMAGING SYSTEM in the name of Patrick Ledden, the applicant herein.

INT-CL-ISSUED: [07] G01V 3/00

INT-CL-CURRENT:

TYPE IPC	DATE
CIPS G01 R 33/32	20060101
CIPS G01 R 33/36	20060101

US-CL-ISSUED: 324/318
US-CL-CURRENT: 324/318

FIELD-OF-CLASSIFICATION-SEARCH: 324/318-322
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4506224	March 1985	Krause	
4746866	May 1988	Roschmann	
4751464	June 1988	Bridges	
4887039	December 1989	Roemer et al.	
5557247	September 1996	Vaughan, Jr.	
5986454	November 1999	Leifer	324/318
5990681	November 1999	Richard et al.	324/318
6043658	March 2000	Leussier	324/318
6150816	November 2000	Srinivasan	324/318
6169401	January 2001	Fujita et al.	324/318

OTHER PUBLICATIONS

Ledden et al., "Volume Coil Transmit Surface Coil Receive System for Brain Imaging at 3T", Proceedings of the International Society of Magnetic Resonance in Medicine, p. 168 (1999).

ART-UNIT: 2862

PRIMARY-EXAMINER: Lefkowitz; Edward

ASSISTANT-EXAMINER: Vargas; Dixomara

ATTY-AGENT-FIRM: Morse, Altman & Martin

ABSTRACT:

A magnetic resonance imaging system comprises: a housing providing a medical diagnostic chamber for a subject therewithin lying along an axis. The housing contains: a transmit/receive inductor system having a coil about the axis in proximity with the housing, a gradient inductor system having a coil operatively associated with the transmit/receive inductor system, and a field inductor system having a coil operatively associated with the transmit/receive inductor system. The field coil establishes a supervening field about the entire system. The gradient coil initiates perturbations in the fields and produces signals derived responsively from the perturbations. The transmit/receive coil includes a series of electrical transmission line elements paraxially distributed with respect to the axis about the subject. Each transmission line element includes an outer conductor and an inner conductor spaced radially from the outer conductor relative to the axis. The transmit/receive coil initially transmits to the subject a radio frequency energy field and responsively receives from the subject a magnetic resonance energy field. The signals produced correspond to spatial indicia derived from the subject and are presented as such by a master controller.

74 Claims, 28 Drawing figures

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw De

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☐ 4. Document ID: US 6710598 B2 Relevance Rank: 64

L39: Entry 6 of 16 File: USPT Mar 23, 2004

US-PAT-NO: 6710598
DOCUMENT-IDENTIFIER: US 6710598 B2

TITLE: RF surface resonator for a magnetic resonance imaging apparatus

DATE-ISSUED: March 23, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Leussler; Christoph Guenther	Hamburg			DE
Zahn; Daniel	Hamburg			DE

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Koninklijke Philips Electronics N.V.	Eindhoven			NL	03

APPL-NO: 10/181595 [PALM]
DATE FILED: July 16, 2002

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
DE	100 56 807	November 16, 2000

PCT-DATA:

APPL-NO	DATE-FILED	PUB-NO	PUB-DATE	371-DATE
PCT/EP01/13259	November 14, 2001	WO02/41020	May 23, 2002	

INT-CL-ISSUED: [07] G01V 3/00

INT-CL-CURRENT:

TYPE IPC	DATE
CIPS G01 R 33/34	20060101
CIPN G01 R 33/28	20060101
CIPS G01 R 33/341	20060101
CIPN G01 R 33/422	20060101

US-CL-ISSUED: 324/318; 324/322, 600/422
US-CL-CURRENT: 324/318; 324/322, 600/422

FIELD-OF-CLASSIFICATION-SEARCH: 324/318, 324/322, 324/300, 324/307, 324/309, 324/314, 600/422, 600/421
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

achieved by the separation of parts of the surface resonator by means of diodes (Dx) that can be switched.

11 Claims, 14 Drawing figures

☐ 5. Document ID: US 7012429 B1 Relevance Rank: 64

L39: Entry 1 of 16 File: USPT Mar 14, 2006

US-PAT-NO: 7012429
DOCUMENT-IDENTIFIER: US 7012429 B1

TITLE: Magnetic resonance imaging system using coils having distributed transmission line elements with outer and inner conductors

DATE-ISSUED: March 14, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ledden; Patrick	Malden	MA		US

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Nova Medical, Inc.	Wilmington	MA		US	02

APPL-NO: 10/329200 [PALM]
DATE FILED: December 24, 2002

RELATED-US-APPL-DATA:
continuation parent-doc US 09684680 00 20001007 US 6501274 A child-doc US 10329200
us-provisional-application US 60159662 00 19991015

INT-CL-ISSUED:

TYPE	IPC	DATE	IPC-OLD
IPCP	G01V3/00	20060101	G01V003/00

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPP	G01 V 3/00	20060101

US-CL-ISSUED: 324/318
US-CL-CURRENT: 324/318

FIELD-OF-CLASSIFICATION-SEARCH: 324/318, 324/322, 324/307, 324/309, 324/300
See application file for complete search history.

PRIOR-ART-DISCLOSED:

Each transmission line element includes an outer conductor and an inner conductor spaced radially from the outer conductor relative to the axis. Capacitive elements are dispersed among the inner conductor and outer conductor. The coil includes capacitive elements connecting pairs of conductors. The capacitive elements may connect pairs of outer conductors or pairs of inner conductors.

59 Claims, 28 Drawing figures

☐ 6. Document ID: US 6711430 B1 Relevance Rank: 64

L39: Entry 5 of 16 File: USPT Mar 23, 2004

US-PAT-NO: 6711430
DOCUMENT-IDENTIFIER: US 6711430 B1

TITLE: Method and apparatus for performing neuroimaging

DATE-ISSUED: March 23, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ferris; Craig F.	Holden	MA		
King; Jean A	Worcester	MA		
Allard; Arthur C.	Templeton	MA		
Ludwig; Reinhold	Paxton	MA		
Bogdanov; Gene	Manchester	CT		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Insight Neuroimaging Systems, Inc.	Worcester	MA			02

APPL-NO: 09/694087 [PALM]
DATE FILED: October 20, 2000

PARENT-CASE:
RELATED APPLICATION(S) This application is a is a continuation-in-part of U.S. application Ser. No. 09/169,602 filed on Oct. 9, 1998 now U.S. Pat. No. 6,275,723 issued Aug. 14, 2001, the entire teachings of which are incorporated herein by reference.

INT-CL-ISSUED: [07] A61B 5/055, G01V 3/00

INT-CL-CURRENT:

TYPE IPC	DATE
CIPP A61 B 5/055	20060101

US-CL-ISSUED: 600/417; 600/422, 324/318

6232779	May 2001	Tropp et al.	324/322
6275723	August 2001	Ferris et al.	600/417

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
44 08 194	September 1995	DE	
0290187	November 1988	EP	
00/57782	October 2000	WO	

OTHER PUBLICATIONS

K. Kamada et al., "Anatomical and functional imaging of the auditory cortex in awake mustached bats using magnetic resonance technology" Brain Research Protocols, vol. 4, 1999, pp. 351-359.
K. Lahti et al., "Imaging brain activity in conscious animals using functional MRI" Journal of Neuroscience Methods, vol. 82, No. 1, Jul. 1, 1998, pp. 75-83.
T. Kamiryo, et al., "Enhanced Magnetic Resonance Imaging of the Rat Brain Using a Stereotactic Device with a Small Head Coil: Technical Note", Act Neurochir 133:87-92 (1995).
E. Tabuchi, et al., "Functional MRI Using Awake Animal: Brain Activity Induced by Drinking", Jpn. J. Physiol 45(1):S194 (1995).

ART-UNIT: 3737

PRIMARY-EXAMINER: Shaw; Shawna J.

ATTY-AGENT-FIRM: Darby & Darby

ABSTRACT:

The present invention relates to systems and methods of performing magnetic resonance imaging (MRI) in awake animals. The invention utilizes head and body restrainers to position an awake animal relative to a radio frequency dual coil system operating in a high field magnetic resonance imaging system to provide images of high resolution without motion artifact.

31 Claims, 41 Drawing figures

☐ 7. Document ID: US 4672972 A Relevance Rank: 64

L39: Entry 16 of 16 File: USPT Jun 16, 1987

US-PAT-NO: 4672972
DOCUMENT-IDENTIFIER: US 4672972 A
**** See image for Certificate of Correction ****

TITLE: Solid state NMR probe

7900245 July 1980 NL 336/150

OTHER PUBLICATIONS

"A Catheter NMR Probe for In Vivo NMR Measurements of Internal Organs", H. L. Kanter, R. S. Balaban and R. W. Briggs, NIH National Heart, Lung, and Blood Institute, Bethesda, MD.
The Society of Magnetic Resonance in Medicine; Second Annual Meeting Aug. 16-19, 1983, San Francisco, California.

ART-UNIT: 335

PRIMARY-EXAMINER: Howell; Kyle L.

ASSISTANT-EXAMINER: Smith; Ruth S.

ATTY-AGENT-FIRM: Fitch, Even, Tabin & Flannery

ABSTRACT:

An in vivo NMR probe is disposed at the distal end of a catheter or endoscope for obtaining NMR spectra from within a patient. The probe is constructed from a passive integrated circuit including a receiving coil and a parametric up-converter for increasing the receivied frequency of the NMR emissions. One or more coaxial cables disposed in a lumen of the catheter connect the integrated circuit probe to an external NMR processor. The external processor may also excite the coil to radiate a localized perturbation field prior to obtaining NMR emission data of an area of interest. Alternatively, the probe may be constructed from an active circuit which enables the coil to be tuned to an NMR emission frequency of interest. A closed loop refrigeration circuit utilizing lumens in the catheter or Peltier junction devices on the integrated circuit provide for temperature stability of the active devices.

31 Claims, 5 Drawing figures

☐ 8. Document ID: US 5602479 A Relevance Rank: 63

L39: Entry 12 of 16 File: USPT Feb 11, 1997

US-PAT-NO: 5602479
DOCUMENT-IDENTIFIER: US 5602479 A

TITLE: Quadrature radio frequency coil for magnetic resonance imaging

DATE-ISSUED: February 11, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Srinivasan; Ravi	Richmond Hts.	OH		

al., SMR 2nd Annual Meeting, San Francisco, CA, Book of Abstracts p. 217 (1994).
"A 3x3 Mesh Two-Dimensional Ladder Network Resonator For MRI of the Human Head", Meyer, et al., J. Mag. Res. Series B 107, 19-24 (1995).
"A New Quadrature Coil for Neurovascular MR Imaging", Srinivasan, et al., SMR 2nd Annual Meeting, San Francisco, CA, Book of Abstracts, p. 1106 (1994).
"The Spherical Birdcage Resonator", Harpen, J. Mag. Res. 94 550-556 (1991).
"Two Configurations of the Four-Ring Birdcage Coil for .sup.1 H Imaging and .sup.1 H-Decoupled .sup.31 P Spectroscopy of the Human Head", Murphy-Boesch, et al., J. Mag. Res. Series B 103, 103-114 (1994).
"A Multiple-Frequency Coil with a Highly Uniform B.sub.1 Field", Bolinger, et al. J. Mag. Res 81, 162-166 (1988).
"A Volume Optimized Quadrature Elliptical Endcap Birdcage Brain Coil", Wong, et al., SMRM 11th Annual Meeting, Berlin, Book of Abstracts, p. 4015 (1992).
"An Endcap Birdcage Resonator for Quadrature Head Imaging", Hayes, et al., SMRM 5th Annual Meeting, Montreal, Book of Abstracts, Work in Progress, pp. 39-40, 1986.
"Quadrature Detection in the Laboratory Frame", Hoult, et al., Mag. Res. in Medicine 1, 339-353 (1984).
"A Quadrature Coil for the Adult Human Head", Sank, et al., J. Mag. Res. 69 236-242 (1986).
"A Volume Optimized Quadrature Elliptical Endcap Birdcage Brain Coil", Wong, et al., SMRM 11th Annual Meeting, Berlin, Book of Abstracts, p. 4015 1992.

ART-UNIT: 225

PRIMARY-EXAMINER: O'Shea; Sandra L.

ASSISTANT-EXAMINER: Mah; Raymond Y.

ATTY-AGENT-FIRM: Fay, Sharpe, Beall, Fagan, Minnich & McKee

ABSTRACT:

In a magnetic resonance imaging apparatus, a radio frequency coil (40) is disposed closely adjacent the patient's head. The radio frequency coil includes a first annular ring (80, 114) around the patient's head from which a first plurality of legs (82, 116) extend. Opposite legs are interconnected equidistant from the first annular ring to form a virtual ground connection (84, 118). In the embodiment of FIG. 6, a second annular ring (120) is disposed parallel to the first annular ring with a second plurality of legs (122) extending between the first and second annular rings. By adjusting a ratio .rho. of the current flow in the loops defined by the first legs, the first annular ring and virtual ground relative to the current loops defined by the second legs and the first and second annular rings, the linearity of the B.sub.1 field within the head coil is selectively adjustable (FIG. 8).

17 Claims, 11 Drawing figures

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9. Document ID: US 6720768 B2 Relevance Rank: 63

L39: Entry 4 of 16 File: USPT Apr 13, 2004

US-PAT-NO: 6720768

OTHER PUBLICATIONS

Fujita et al., "A hybrid inverse approach applied to the design of lumped-element RF coils," IEEE Trans. Biomedical Engineering, 46:353-361, Mar. 1999.
Hayes et. al., "An efficient, highly homogeneous radiofrequency coil for whole-body NMR imaging at 1.5T," The Journal of Magnetic Resonance, 63:622-628, 1985.
Meyer et al., "A 3.times.3 Mesh Two-Dimensional Ladder Network Resonator for MRI of the Human Head," The Journal of Magnetic Resonance, 107, 19-24, 1995.

ART-UNIT: 2862

PRIMARY-EXAMINER: Gutierrez; Diego

ASSISTANT-EXAMINER: Shrivastav; Brij B.

ATTY-AGENT-FIRM: Klee; Maurice M.

ABSTRACT:

Asymmetric radio frequency (RF) coils for magnetic resonance applications are provided. Also provided are time harmonic methods for designing such coils as well as symmetric coils. In addition, methods for converting complex current density functions into discrete capacitive and inductive elements are provided.

13 Claims, 19 Drawing figures

☐ 10. Document ID: US 6029082 A Relevance Rank: 63

L39: Entry 9 of 16 File: USPT Feb 22, 2000

US-PAT-NO: 6029082
DOCUMENT-IDENTIFIER: US 6029082 A

TITLE: Less-claustrophobic, quadrature, radio-frequency head coil for nuclear magnetic resonance

DATE-ISSUED: February 22, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Srinivasan; Ravi	Richmond Heights	OH		
Liu; Haiying	Minneapolis	MN		
Elek; Robert A.	Chardon	OH		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Picker International, Inc.	Highland Heights	OH			02

Srinivasan, et al, SMR, 3rd Scientific Meeting, Nice, France, Book of Abstracts, 972 (1995).
"A Hybrid Birdcage Coil Design for Improved Sensitivity and Homogeneity in Head Imaging and Spectroscopy." Meyer, et al., SMRM 12th Annual Meeting, New York, Book of Abstracts, 217 (1994).
"A User-Friendly, `Open-Faced` Head Coil for MRI at 1.5T." Srinivasan, et al., SMR 4th Scientific Meeting, New York, Book of Abstracts (1996).

ART-UNIT: 377

PRIMARY-EXAMINER: Smith; Ruth S.

ATTY-AGENT-FIRM: Fay, Sharpe, Fagan, Minnich & McKee, LLP

ABSTRACT:

A less-claustrophobic, quadrature, radio-frequency head coil (42) includes first and second broken end rings (90, 92) connected to each other in parallel by a plurality of leg conductors (94). At least two of the leg conductors are interconnected by a third arcuate conductor segment (98) axially displaced from planes of the first and second end rings to provide an opening (44) over a subject's face. The opening reduces patient claustrophobia and permits access to the patient for life-support devices or the practice of interventional medicine. The end rings have a fixed capacitance (C.sub.1, C.sub.2) between each pair of leg conductors. The fixed capacitance C.sub.1 between at least one pair of leg conductors and the fixed capacitance C.sub.2 between at least the pair of leg conductors adjacent the opening, where C.sub.2 >C.sub.1. A two-port feed (66, 68) circumferentially attached to the coil generally opposite the opening matches the individual linear modes. Thus, the radio frequency coil is able to maintain two preferred principal linear modes (A, B) across the open area of the coil.

17 Claims, 7 Drawing figures

☐ 11. Document ID: US 5432450 A Relevance Rank: 63

L39: Entry 14 of 16 File: USPT Jul 11, 1995

US-PAT-NO: 5432450
DOCUMENT-IDENTIFIER: US 5432450 A

TITLE: Truncated nuclear magnetic imaging probe

DATE-ISSUED: July 11, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Rubinson; Kenneth A.	Cincinnati	OH		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE

"Novel High-Frequency Resonator For NMR Imaging and Spectroscopy" (Journal of Magnetic Resonance 89, 331-342) (1990).
"Broadband (up to 10GHz) Electron-Paramagnetic-Resonance Spectrometer: CW Implementation With Direct Detection" (Rev. Sci. Instrum. 60 (30), Mar. 1989.
"Surface Coil For MR Imaging Of The Skin" (Magnetic Resonance In Medicine 5, 456-461) (1987).
"Intravascular (Catheter) NMR Receiver Probe: Preliminary Design Analysis And Application To Canine Iliofemoral Imaging" (Magnetic Resonance In Medicine 24, 343-357 (1992).
"Dedicated Coils In Magnetic Resonance Imaging", Sobol, W. T., Revs. Magn. Reson. Med., 1987.

ART-UNIT: 268

PRIMARY-EXAMINER: Arana; Louis

ATTY-AGENT-FIRM: Morris, Manning & Martin

ABSTRACT:

A planar, truncated imaging probe having a large surface area for medical imaging is disclosed. The planar imaging probe includes first and second conductive members that are adapted at their respective first ends to couple to a radio frequency source. The second ends of the first and second conductive members are electrically short-circuited together to form an electrical circuit. The second conductive member has a length and width that is greater than the length and width of the first conductive member so a side of the first conductive member is covered by the second conductive member. The first conductive member is preferably composed of two slanting surfaces that join at an apex while the second conductive member includes a planar member and upwardly sloping sides to further shield the first conductive member. The first and second conductive members may be separated by electrical isolation stand-offs to improve the rigidity of the first conductive member for supporting the sample to be imaged. The planar, truncated imaging probe of the present invention may be directly coupled or inductively coupled to the radio frequency source.

12 Claims, 13 Drawing figures

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12. Document ID: US 6591128 B1 Relevance Rank: 63

L39: Entry 7 of 16 File: USPT Jul 8, 2003

US-PAT-NO: 6591128
DOCUMENT-IDENTIFIER: US 6591128 B1

TITLE: MRI RF coil systems having detachable, relocatable, and or interchangeable sections and MRI imaging systems and methods employing the same

DATE-ISSUED: July 8, 2003

INVENTOR-INFORMATION:

11299754 November 1999 JP

OTHER PUBLICATIONS

"Functional Brain Imaging", Orrison, et al., 1995, New York: Moseby. 477.
"Functional Mapping of the Human Visual Cortex at 4 and 1.5 Tesla Using Deoxygenation Contrast EPI", Turner, et al. Magn. Reson. Med, 1993 29(2) : p. 277-9.
"An Efficient, Highly Homogeneous Radiofrequency Coil For Whole-Body NMR Imaging at 1.5T", Hayes, et al., J. Magn. Reson. Med., 1985 63: p. 622-688.
"The Theory of the Bird-Cage Resonator", Tropp, J. Magn. Reson., 1989 82: p. 51-62.

"A Phased Array Echoplanar Imaging System For fMRI", Frederick, et al., Magn. Reson. Imaging, 1998 (0730-725X TA--Magn. Reson. Imaging PG -121-9SB -M).
"The NMR Phased Array", Roemer, et al. 1990 (0740-3194 TA--Magn. Reson. Med. PG--192-225 SB -M).
"Evaluation of a "True"Dome Quadrature Head Coil", Srinivasan, et al. Proc. SMR, 3rd Annual Meeting, 1995.

ART-UNIT: 3742

PRIMARY-EXAMINER: Van; Quang T.

ATTY-AGENT-FIRM: Fay, Sharpe, Fagan, Minnich & McKee, LLP

ABSTRACT:

An RF coil construction (40, 40') includes removable, relocatable, and/or detachable sections (42, 44) that are inherently decoupled. The sections can be relocated, removed, or exchanged with sections having different coil sizes or coil configurations, allowing the coil configuration to be tailored to a desired imaging procedure and region of the brain. The coil construction provides space for stimulation devices and adjusting patient access and comfort. Since the operator can select coil removal or placement to reduce the amount of data outside the region of interest, the coil construction can also reduce scanning and reconstruction time, reduce artifacts, and provide increased temporal resolution and image throughput.

35 Claims, 11 Drawing figures

☐ 13. Document ID: US 6004269 A Relevance Rank: 63

L39: Entry 10 of 16 File: USPT Dec 21, 1999

US-PAT-NO: 6004269
DOCUMENT-IDENTIFIER: US 6004269 A

TITLE: Catheters for imaging, sensing electrical potentials, and ablating tissue

DATE-ISSUED: December 21, 1999

Saksena et al., "Low-Energy Transvenous Ablation of the Canine Atrioventricular Conduction System with a Suction Electrode Catheter," Aug., 1987, Circulation, vol. 76, No. 2, pp. 394-403.
Schuger et al., "Long-Term Effects of Percutaneous Laser Ballon Ablation from the Canine Coronary Sinus," May 18, 1992, pp. 947-954.
Schuger et al., "Percutaneous Transcatheter Laser Ballon Ablation from the Canine Coronary Sinus: Implications for the Wolff-Parkinson-White Syndrome," 1990, Lasers in Surgery and Medicine, vol. 10, No. 2
Selle, "Definitive Surgery for Postinfarction Ventricular Tachycardia," Mar., 1992, Coronary Artery Disease, vol. 3, No. 3, pp. 204-209, Current Science ISSN 0954-6928.
Sung, "Arrhythmias and the Autonomic Nervous System," Sep., 1987, Cardio, pp. 77-80.
Tarjan et al., "An Experimental Device for Low-Energy, Precise Ablation of AV Conduction," Nov.-Dec., 1986, PACE, vol. 9, pp. 1396-1402.

ART-UNIT: 377

PRIMARY-EXAMINER: Jaworski; Francis J.

ATTY-AGENT-FIRM: Lyon & Lyon LLP

ABSTRACT:

An acoustic imaging system for use within a heart has a catheter (6), an ultrasound device (10) incorporated into the catheter (6), and an electrode (300, 304, 334, 394) mounted on the catheter (6). The ultrasound device (10) directs ultrasonic signals toward an internal structure in the heart to create an ultrasonic image, and the electrode (300, 304, 334, 394) is arranged for electrical contact with the internal structure. A chemical ablation device (55, 86, 314, 396) mounted on the catheter (6) ablates at least a portion of the internal structure by delivery of fluid to the internal structure. The ablation device (55) may include a material that vibrates in response to electrical excitation, the ablation being at least assisted by vibration of the material. The ablation device may alternatively be a transducer (414) incorporated into the catheter (6), arranged to convert electrical signals into radiation and to direct the radiation toward the internal structure. The electrode may be a sonolucent structure (304, 334) incorporated into the catheter (6).

13 Claims, 98 Drawing figures

☐ 14. Document ID: US 5019778 A Relevance Rank: 63

L39: Entry 15 of 16 File: USPT May 28, 1991

US-PAT-NO: 5019778
DOCUMENT-IDENTIFIER: US 5019778 A

TITLE: Magnetic resonance apparatus with an optimized detection field

DATE-ISSUED: May 28, 1991

OTHER PUBLICATIONS

J. C. Watkins et al., "High Pass Bird-Cage Coil for Nuclear-Magnetic Resonance", Rev. Sci. Instrum., vol. 59, No. 6, Jun. 1988, pp. 926-929.

ART-UNIT: 265

PRIMARY-EXAMINER: Tokar; Michael J.

ATTY-AGENT-FIRM: Squire; William

ABSTRACT:

In an rf coil of a magnetic resonance apparatus steps are taken to optimize a uniform rf measuring field. To this end, axially extending current conductors are provided with means for generating a non-constant effective current intensity in current paths extending across a cylindrical surface so as to be parallel with a symmetry axis of the coil. This can be realized by deflecting axial conductors away from the cylindrical surface, by partly shielding them, by adding auxiliary coils to be individually controlled, or by connecting L-C circuits across the current conductors.

10 Claims, 4 Drawing figures

☐ 15. Document ID: US 5588432 A Relevance Rank: 63

L39: Entry 13 of 16 File: USPT Dec 31, 1996

US-PAT-NO: 5588432
DOCUMENT-IDENTIFIER: US 5588432 A

TITLE: Catheters for imaging, sensing electrical potentials, and ablating tissue

DATE-ISSUED: December 31, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Crowley; Robert J.	Wayland	MA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Boston Scientific Corporation	Watertown	MA			02

APPL-NO: 08/500115 [PALM]
DATE FILED: July 10, 1995

PARENT-CASE:
CROSS REFERENCE TO RELATED APPLICATIONS This is a continuation of application Ser. No. 08/086,523, filed Jul. 1, 1993, now abandoned, which is a continuation-in-part

ultrasound device is arranged to direct signals. An acoustic marker mounted on the catheter emits a sonic wave when electrically excited. A central processing unit creates a graphical representation of the internal structure, and super-imposes items of data onto the graphical representation at locations that represent the respective plurality of locations within the internal structure corresponding to the plurality of items of data. A display system displays the graphical representation onto which the plurality of items of data are super-imposed.

31 Claims, 52 Drawing figures

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16. Document ID: US 5840031 A Relevance Rank: 63

L39: Entry 11 of 16 File: USPT Nov 24, 1998

US-PAT-NO: 5840031
DOCUMENT-IDENTIFIER: US 5840031 A
**** See image for Certificate of Correction ****

TITLE: Catheters for imaging, sensing electrical potentials and ablating tissue

DATE-ISSUED: November 24, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Crowley; Robert J.	Wayland	MA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Boston Scientific Corporation	Boston	MA			02

APPL-NO: 08/475896 [PALM]
DATE FILED: June 7, 1995

PARENT-CASE:
This application is a divisional of U.S. application Ser. No. 08/086,523, filed Jul. 1, 1993 and now abandoned. The entire disclosures of U.S. Pat. No. 4,951,677 and U.S. Pat. No. 5,421,338 are hereby incorporated herein by reference.

INT-CL-ISSUED: [06] A61B 8/00

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	A61 B 17/22	20060101
CIPN	A61 B 18/00	20060101
CIPS	A61 B 18/14	20060101
CIPN	A61 B 19/00	20060101
CIPS	B06 B 1/06	20060101
CIPS	A61 B 8/12	20060101

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[File 34] **SciSearch(R) Cited Ref Sci** 1990-2007/Feb W4
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[File 89] **GeoRef** 1785-2007/Jan B1

[File 65] **Inside Conferences** 1993-2007/Mar 06

[File 360] **Specialty Chemicals Update Program** 2000/Q2

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[File 347] **JAPIO** Dec 1976-2006/Nov(Updated 070228)

[File 305] **Analytical Abstracts** 1980-2007/Mar W1

**File 305: Alert feature enhanced for multiple files, duplicate removal, customized scheduling. See HELP ALERT.*

[File 350] **Derwent WPIX** 1963-2006/UD=200716

**File 350: DWPI has been enhanced to extend content and functionality of the database. For more info, visit http://www.dialog.com/dwpi/.*

[File 162] **Global Health** 1983-2007/Feb

[File 164] **Allied & Complementary Medicine** 1984-2007/Mar

[File 357] **Derwent Biotech Res.** _1982-2007/Mar W1

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[File 294] **ONTAP(R) SciSearch(R) Cited Ref Science**


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? d s
Set     Items   Description
S1        249   S AU=(TROPP J? OR TROPP, J?)
S2    2139000   S MRI OR MAGNETIC(1W)(IMAG? OR IMAGING) OR MAGNETIC(W)RESONAN? OR NMR OR
NUCLEAR()MAGNETIC()RESONANCE OR FTNMR OR FTMRI
S3     196296   S MAGNETORESONANCE OR PMR OR PROTON(W)MAGNETIC(W)RESONAN? OR MR()(IMAGE?
OR IMAGING)
S4       8941   S MC=(S01-E02A2 OR S03-E07A OR S01-E02A8A OR S01-E02A1 OR S03-E07C OR
S05-D02B1 OR S03-C02F1)
S5      54903   S IC=(G01N-024/08 OR G01V-003/A75 OR G01R-033/56F OR G01V-003/00 OR
A61B-005/05)
S6      26589   S CC=(A0758 OR A8760I OR B7510N)
S7    2220871   S S2:S6
S8     129641   S DOME? ?
S9    3116487   S RESONA???????
S10    652622   S SHIELD?
S11    625521   S RADIO()FREQ? OR RF? ?
S12      1445   S S8 AND S9
S13         1   S S12 AND S1
S14       115   S S8(3N)S9
S15        81   S S8(2N)S9
S16        23   S S7 AND S15
S17        11   RD  (unique items)
S18        20   S S12 AND S10
S19        19   S S18 NOT S17
S20         6   S S19 AND S7
S21         7   S S12 AND S11 AND S10
S22         1   S S21 NOT (S13 OR S17 OR S20)
S23        35   S S15 AND (S7 OR S11)
S24        24   S S23 NOT (S13 OR S17 OR S20 OR S22)
S25         7   RD  (unique items)

?
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17/9/2 (Item 2 from file: 155) **Links**
Fulltext available through: John Wiley and Sons USPTO Full Text Retrieval Options ScienceDirect
MEDLINE(R)

11068741 **PMID:** 8892214

Sensitivity-enhanced echo-planar MRI at 1.5T using a 5 x 5 mesh dome resonator.

Meyer K L; Kim K; Li T; Tulipano P K; Lee K M; DeLaPaz R; Hirsch J; Ballon D
Department of Medical Physics, Memorial Sloan-Kettering Cancer Center, New York, NY 10021, USA.
Magnetic resonance in medicine - official journal of the Society of Magnetic Resonance in Medicine / Society of Magnetic Resonance in Medicine (UNITED STATES) Oct 1996 , 36 (4) p606-12 , **ISSN:** 0740-3194--Print
Journal Code: 8505245
Publishing Model Print
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Subfile: INDEX MEDICUS
In this work a 5 x 5 mesh **dome resonator** that has been optimized for functional brain imaging is presented. The resonator was reduced in length and diameter compared with previous versions to reduce sample losses, thus enhancing the signal-to-noise ratio of the acquired data. In addition, a 5 x 5 mesh design was employed, which offered improved axial homogeneity over an earlier 3 x 3 mesh version. The new resonator exhibited high sensitivity and good homogeneity over the brain volume, permitting analysis of functional activation over large areas of the cerebral cortex. In a direct comparison with a standard clinical head-imaging resonator, the high sensitivity of the 5 x 5 mesh **dome resonator** resulted in greater statistical confidence in functional activation.
Descriptors: *Echo-Planar Imaging--methods--MT ; Cerebral Cortex--pathology--PA; Humans; Models, Theoretical; Research Support, Non-U.S. Gov't; Sensitivity and Specificity
Record Date Created: 19970205
Record Date Completed: 19970205

17/9/5 (Item 1 from file: 5) **Links**
Fulltext available through: USPTO Full Text Retrieval Options ScienceDirect
Biosis Previews(R)

16492603 **Biosis No.:** 200200086114
Dome-shaped resonator for nuclear magnetic resonance imaging and spectroscopy

Author: Meyer K L; Ballon D
Author Address: New York, N.Y., USA**USA
Journal: Official Gazette of the United States Patent and Trademark Office Patents 1204 (1): p 113-114 Nov. 4, 1997 1997
Medium: print
Patent Number: US 5682893 **Patent Date Granted:** Nov. 4, 1997 19971104 **Patent Classification:** 128-653.5
Patent Assignee: SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH **Patent Country:** USA
ISSN: 0098-1133
Document Type: Patent
Record Type: Citation
Language: English
Descriptors:
Major Concepts: Methods and Techniques; Pathology; Radiation Biology
Miscellaneous Terms: DIAGNOSTIC TESTING; **MAGNETIC RESONANCE IMAGING**; MEDICAL EQUIPMENT; **MRI**; **NMR**; **NUCLEAR MAGNETIC RESONANCE**
Concept Codes:
12504 Pathology - Diagnostic
01004 Methods - Laboratory methods
06502 Radiation biology - General

17/9/7 (Item 1 from file: 34) **Links**
Fulltext available through: John Wiley and Sons USPTO Full Text Retrieval Options ScienceDirect
SciSearch(R) Cited Ref Sci

05264673 **Genuine Article#:** VL633 **Number of References:** 18

SENSITIVITY-ENHANCED ECHO-PLANAR MRI AT 1.5T USING A 5X5-MESH DOME RESONATOR

Author: MEYER KL; KIM K; LI T; TULIPANO PK; LEE KM; DELAPAZ R; HIRSCH J; BALLON D
Corporate Source: MEM SLOAN KETTERING CANC CTR,DEPT PHYS MED,1275YORK AVE/NEW YORK//NY/10021; MEM SLOAN KETTERING CANC CTR,DEPT RADIOL/NEW YORK//NY/10021; MEM SLOAN KETTERING CANC CTR,DEPT NEUROL/NEW YORK//NY/10021; CORNELL UNIV,COLL MED,DEPT NEUROL & NEUROSCI/NEW YORK//NY/00000; COLUMBIA UNIV,DEPT NEURORADIOL/NEW YORK//NY/00000
Journal: MAGNETIC RESONANCE IN MEDICINE , 1996 , V 36 , N4 (OCT) , P 606-612
ISSN: 0740-3194
Language: ENGLISH **Document Type:** ARTICLE
Geographic Location: USA
Subfile: SciSearch; CC CLIN--Current Contents, Clinical Medicine
Journal Subject Category: RADIOLOGY & NUCLEAR MEDICINE
Abstract: In this work a 5 x 5 mesh **dome resonator** that has been optimized for functional brain imaging is presented, The resonator was reduced in length and diameter compared with previous versions to reduce sample losses, thus enhancing the signal-to-noise ratio of the acquired data, In addition, a 5 x 5 mesh design was employed, which offered improved axial homogeneity over an earlier 3 x 3 mesh version, The new resonator exhibited high sensitivity and good homogeneity over the brain volume, permitting analysis of functional activation over large areas of the cerebral cortex. In a direct comparison with a standard clinical head-imaging resonator, the high sensitivity of the 5 x 5 mesh **dome resonator** resulted in greater statistical confidence in functional activation.
Descriptors--Author Keywords: FUNCTIONAL **MRI** ; ECHO-PLANAR IMAGING ; RADIOFREQUENCY RESONATOR ; 2-DIMENSIONAL LADDER NETWORK
Identifiers-- KeyWords Plus: HUMAN BRAIN
Research Fronts: 94-0158 001 (FUNCTIONAL **MAGNETIC-RESONANCE-IMAGING**; MAPPING HUMAN BRAIN ACTIVITY IN-VIVO; MR SPECTROSCOPY)
94-2395 001 (POSITRON EMISSION TOMOGRAPHY; FUNCTIONAL BRAIN IMAGES; WHOLE-BODY PET SCANNER)
Cited References:

BALLON D, 1990, V90, P131, J MAGN RESON
BALLON D, 1994, V111, P23, J MAGN RESON SER A
BANDETTINI PA, 1993, V30, P161, MAGNET RESON MED
BANDETTINI PA, 1994, V7, P12, NMR BIOMED
DOMALSKI S, 1995, P931, P SMR 3 ANN M NIC
HAYES CE, 1985, V63, P622, J MAGN RESON
HIRSCH J, 1995, V92, P6469, P NATL ACAD SCI USA
HIRSCH J, 1994, P637, P SMR 2 ANN M SAN FR
INSKO EK, 1992, P637, P SMRM 11 ANN M BERL
KWONG KK, 1992, V89, P5675, P NATL ACAD SCI USA
LEE AT, 1995, V33, P745, MAGNET RESON MED
MEYER KL, 1995, V107, P19, J MAGN RESON SER B
MEYER KL, 1994, P217, P SMR 2 ANN M SAN FR

PORTER JR, 1995, P181, P SMR 3 ANN M NIC
POSSE S, 1995, P856, P SMR 3 ANN M NIC
WINER BJ, 1962, STATISTICAL PRINCIPL
WONG EC, 1992, P4015, P SMRM 11 ANN M BERL
WOODS RP, 1993, V17, P536, J COMPUT ASSIST TOMO

17/9/9 (Item 2 from file: 350) **Links**
Derwent WPIX

0014493963 *Drawing available*
WPI Acc no: 2004-674273/200466
XRPX Acc No: N2004-534130
Magnetic resonance imaging dome-like RF coil for imaging patient's head, has four ring units, where two ring units are axially closer than other two ring units, and one ring unit encompasses smaller area than other three ring units
Patent Assignee: GENERAL ELECTRIC CO (GENE)
Inventor: MURPHY-BOESCH J; PETROPOULOS L S; RICHMOND K

Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 6788058	B1	20040907	US 2001270660	P	20010308	200466	B
			US 200294378	A	20020308		

Priority Applications (no., kind, date): US 2001270660 P 20010308; US 200294378 A 20020308

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 6788058	B1	EN	13	10	Related to Provisional	US 2001270660

Alerting Abstract US B1
NOVELTY - The coil (30) has a ring unit at one end and adjacent to another ring unit. The latter unit is adjacent to a third ring unit that has a fourth unit adjacent to it and at another coil end. The fourth unit has a smaller area than the other three units. Multiple axial units are connected between the four ring units, where the former two units are axially closer than the latter two units.
DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of **magnetic resonance imaging**.
USE - Used for **magnetic resonance imaging (MRI)** of a patient's head.
ADVANTAGE - The ring unit encompassing smaller area provides for the adjustment of the radio frequency field in the area corresponding to the center of the coil without hot spots, thereby preventing the degradation in the resulting images. The coil provides 25 percent more improvement than the conventional coils.
DESCRIPTION OF DRAWINGS - The drawing shows a perspective view schematic diagram of a **magnetic resonance imaging** coil.
C1, C4, C6, C7 Capacitors
30 **Magnetic resonance imaging** coil

Title Terms /Index Terms/Additional Words: MAGNETIC; RESONANCE; IMAGE; DOME; RF; COIL; PATIENT; HEAD; FOUR; RING; UNIT; TWO; AXIS; CLOSE; ONE; ENCOMPASSING; SMALLER; AREA; THREE

Class Codes

International Patent Classification

IPC	Class Level	Scope	Position	Status	Version Date
G01V-003/00			Main		"Version 7"

US Classification, Issued: 324318000

File Segment: EPI;
DWPI Class: S01; S03; S05; V02
Manual Codes (EPI/S-X): **S01-E02A2**; S01-E02A8E; **S03-E07A**; **S05-D02B1**; V02-F01G; V02-F03B

Original Publication Data by Authority

United States

Publication No. US 6788058 B1 (Update 200466 B)
Publication Date: 20040907
Asymmetric ring dome radio frequency coil
Assignee: General Electric Company, Schenectady, NY, US (GENE)
Inventor: Petropoulos, Labros S., Solon, OH, US
Murphy-Boesch, Joseph, Aurora, OH, US
Richmond, Keith, Garrettsville, OH, US
Agent: Della Penna, Michael A., US
Armstrong Teasdale LLP, US
Language: EN (13 pages, 10 drawings)
Application: US 2001270660 P 20010308 (Related to Provisional)
US 200294378 A 20020308 (Local application)
Original IPC: G01V-3/00(A)
Current IPC: G01V-3/00(A)
Original US Class (main): 324318
Original Abstract: A MRI coil having an axis and a first end and an opposite second end with respect to said axis includes a first ring element at the first end, a second ring element, a third ring element, a fourth ring element at the second end where the first ring element encompasses a smaller area than each of the second, third, and fourth ring elements. The coil also includes a plurality of axial elements connected between the first, second, third and fourth ring elements. The third and fourth ring elements are axially closer than the first and second ring elements.
Claim: What is claimed:

1. 1. A MRI coil having an axis and a first end and an opposite second end with respect to said axis, said coil comprising:
   - a first ring element at said first end;
   - a second ring element adjacent said first ring element;
   - a third ring element adjacent said second ring element;
   - a fourth ring element at said second end and adjacent said third ring element, said first ring element encompassing a smaller area than each of said second, third, and fourth ring elements; and
   - a plurality of axial elements connected between said first, second, third and fourth ring elements, wherein said third and fourth ring elements are axially closer than said first and second ring elements.

17/9/10 (Item 3 from file: 350) **Links**
Derwent WPIX

0008417960 *Drawing available*
WPI Acc no: 1997-535523/199749
Related WPI Acc No: 1996-250606
XRPX Acc No: N1997-445847

Dome shaped resonator for nuclear magnetic imaging and spectroscopy - includes single end conductor with plurality of legs extending along cylinder to join on hemispherical dome

Patent Assignee: SLOAN KETTERING INST CANCER RES (SLOK)
Inventor: BALLON D; MEYER K L

Patent Family (3 patents, 22 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 1997039682	A1	19971030	WO 1997US6823	A	19970424	199749	B
US 5682893	A	19971104	US 1994286683	A	19940805	199750	E
			US 1996638957	A	19960424		
AU 199727413	A	19971112	AU 199727413	A	19970424	199811	E

Priority Applications (no., kind, date): US 1994286683 A 19940805; US 1996638957 A 19960424

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
WO 1997039682	A1	EN	83	23		
National Designated States,Original	AU CA JP MX					
Regional Designated States,Original	AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
US 5682893	A	EN	43	23	C-I-P of application	US 1994286683
					C-I-P of patent	US 5515855
AU 199727413	A	EN			Based on OPI patent	WO 1997039682

Alerting Abstract WO A1
The mesh resonator (1) includes a matrix of meshes formed of typically one end ring conductor (3), eight leg conductors (5a - 5h), and four dome conductors (7a - 7d). It is assumed that all coil segments have zero self-inductance. The end ring conductor is attached to the outer surface of a hollow cylindrical support.
The leg conductors are attached to the outer surface of the cylindrical support and terminate adjacent to the dome shaped closed end. The four dome conductors are attached to the outer surface of the dome shaped closed end with their ends attached to the leg conductors. There are intersection points where the dome conductors intersect. Trap capacitors are provided in the conductors.
ADVANTAGE - Provides a cylindrical volume resonator with degenerate modes for quadrature operation.

Title Terms /Index Terms/Additional Words: DOME; SHAPE; RESONANCE; NUCLEAR; MAGNETIC;

IMAGE; SPECTROSCOPE; SINGLE; END; CONDUCTOR; PLURAL; LEG; EXTEND; CYLINDER; JOIN; HEMISPHERICAL

Class Codes

International Patent Classification

IPC	Class Level	Scope	Position	Status	Version Date
A61B-005/055			Main		"Version 7"

US Classification, Issued: 128653500, 324318000, 324322000, 333227000

File Segment: EngPI; EPI;
DWPI Class: S01; S03; S05; W02; P31
Manual Codes (EPI/S-X): **S01-E02A2**; **S01-E02A8A**; S01-H05; **S03-E07A**; **S05-D02B1**; W02-A03A

Original Publication Data by Authority

Australia

Publication No. AU 199727413 A (Update 199811 E)
Publication Date: 19971112
Assignee: SLOAN KETTERING INST CANCER RES (SLOK)
Inventor: MEYER K L
BALLON D
Language: EN
Application: AU 199727413 A 19970424 (Local application)
Priority: US 1996638957 A 19960424
Related Publication: WO 1997039682 A (Based on OPI patent)
Original IPC: A61B-5/055(A)
Current IPC: A61B-5/055(A)

United States

Publication No. US 5682893 A (Update 199750 E)
Publication Date: 19971104
Dome-shaped resonator for nuclear magnetic resonance imaging and spectroscopy.
Assignee: Sloan-Kettering Institute for Cancer Research, New York, NY, US (SLOK)
Inventor: Ballon, Douglas, Gillette, NJ, US
Meyer, Kristen L., New York, NY, US
Agent: White; John P.
Language: EN (43 pages, 23 drawings)
Application: US 1994286683 A 19940805 (C-I-P of application)

US 1996638957 A 19960424 (Local application)
Related Publication: US 5515855 A (C-I-P of patent)
Original IPC: A61B-5/055(A)
Current IPC: A61B-5/055(A)
Original US Class (main): 128653.5
Original US Class (secondary): 324318 324322 333227
Original Abstract: A radiofrequency resonator for nuclear magnetic resonance imaging and spectroscopy of the human head in which the geometry of the resonator comprises a single end ring connected to a plurality of legs which extend along a cylinder and which are joined in pairs on a hemispherical dome.
Claim:

2. A dual-frequency radiofrequency resonator for nuclear magnetic resonance imaging and spectroscopy of a patient, comprising:
   - a hollow cylindrical support structure with an outer surface, an inner diameter, an open end, and a dome-shaped closed end;
   - an end ring conductor attached to the outer surface of the hollow cylindrical support structure adjacent the open end;
   - eight substantially equal length leg conductors with respective first ends, second ends, and midpoints, each of the respective first ends being electrically joined to the end ring conductor at positions spaced substantially 45 degrees apart from one another, each of the eight leg conductors being attached to the outer surface of the hollow cylindrical support structure and each respective second end of the eight leg conductors terminating adjacent the dome-shaped closed end;
   - four dome conductors attached to the outer surface of the dome-shaped closed end, each of the four dome conductors having respective midpoints and two endpoints, an endpoint of each dome conductor being electrically joined to respective second ends of pairs of leg conductors spaced 135/225 degrees apart from one another, whereby each dome conductor is connected to two of said leg conductors and whereby each leg conductor is connected to one dome conductor;
   - wherein each of said four dome conductors intersects two of said four dome conductors at two intersection points and wherein each of said four dome conductors that intersect each of said two dome conductors are electrically joined to said two intersecting dome conductors at said intersection points;
   - a first gap in said end ring conductor substantially midway between a first pair of said eight leg conductors, each leg conductor of said first pair of leg conductors being spaced 45/315 degrees apart from one another, said first pair of leg conductors being connected to a second pair of said eight leg conductors, said second pair of leg conductors being spaced 180 degrees away from said first pair of leg conductors and being connected to said first pair of leg conductors by a first respective pair of said four dome conductors;
   - a first trap circuit bridging said first gap in said end ring conductor, said first trap circuit including a first trap inductor and a first trap capacitor connected in parallel;
   - a second gap-in said end ring conductor substantially midway between the second pair of leg conductors spaced 180 degrees from the first pair of leg conductors;
   - a second trap circuit bridging said second gap in said end ring conductor, said second trap circuit including a second trap inductor and a second trap capacitor connected in parallel;
   - a third gap in said end ring conductor substantially midway between a third pair of said eight leg conductors, each leg conductor of said third pair of leg conductors being spaced 45/315 degrees apart from one another, said third pair of leg conductors being spaced 90/270 degrees from said first pair of leg conductors and said second pair of leg conductors, said third pair of leg conductors being connected to a fourth pair of said eight leg conductors, said fourth pair of leg conductors being spaced 180 degrees away from said third pair of leg conductors and being connected to said third pair of leg conductors by a respective pair of said four dome

conductors;

- a third trap circuit bridging said third gap in said end ring conductor, said third trap circuit including a third trap inductor and a third trap capacitor connected in parallel;
- a fourth gap in said end ring conductor substantially midway between the fourth pair of leg conductors spaced 180 degrees from the third pair of leg conductors; and
- a fourth trap circuit bridging said fourth gap in said end ring conductor, said fourth trap circuit including a fourth trap inductor and a fourth trap capacitor connected in parallel.

WIPO

Publication No. WO 1997039682 A1 (Update 199749 B)
Publication Date: 19971030
DOME-SHAPED RESONATOR FOR NUCLEAR MAGNETIC RESONANCE IMAGING AND SPECTROSCOPY
Assignee: SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH, US (SLOK)
Inventor: MEYER, KRISTEN, L., US
BALLON, DOUGLAS, US
Language: EN (83 pages, 23 drawings)
Application: WO 1997US6823 A 19970424 (Local application)
Priority: US 1996638957 A 19960424
Designated States: (National Original) AU CA JP MX
(Regional Original) AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Original IPC: A61B-5/055(A)
Current IPC: A61B-5/055(A)
Original Abstract: A radiofrequency resonator (1) for nuclear magnetic resonance imaging and spectroscopy of the human head in which the geometry of the resonator (1) comprises a single end ring (3) connected to a plurality of legs (5(a)-5(h)) which extend along a cylinder and which are joined in pairs on a hemispherical dome (7(a)-7(d)).

17/9/11 (Item 4 from file: 350) **Links**
Derwent WPIX

0007632033 *Drawing available*
WPI Acc no: 1996-250606/199625
Related WPI Acc No: 1997-535523
XRPX Acc No: N1996-210672
RF resonator for NMR imaging and spectroscopy of patient - has four dome conductors attached to outer surface of dome shaped closed and, while each of four dome conductors has respective mid points and end points
Patent Assignee: SLOAN KETTERING INST CANCER RES (SLOK)
Inventor: BALLON D; MEYER K L

Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 5515855	A	19960514	US 1994286683	A	19940805	199625	B

Priority Applications (no., kind, date): US 1994286683 A 19940805

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes
US 5515855	A	EN	28	15	

Alerting Abstract US A
The resonator includes eight substantially equal length leg conductors with respective first ends, second ends, and midpoints. Each of the respective first ends is electrically joined to the end ring conductor at positions spaced 45 deg apart from one another. Four dome conductors are attached to the outer surface of the dome-shaped closed end. E.g. each of the-four dome conductors has respective mid-points and two end-points.
Each of the four dome conductors intersects two of the four dome conductors at two intersection points. Each of the four dome conductors that intersect each of the two dome conductors are electrically joined to the two intersecting dome conductors at the intersection points.
USE/ADVANTAGE - For **nuclear magnetic resonance imaging** and spectroscopy of human head. Improved sensitivity in closed end.

Title Terms /Index Terms/Additional Words: RF; RESONANCE; **NMR**; IMAGE; SPECTROSCOPE; PATIENT; FOUR; DOME; CONDUCTOR; ATTACH; OUTER; SURFACE; SHAPE ; CLOSE; RESPECTIVE; MID; POINT; END

Class Codes

International Patent Classification

IPC	Class Level	Scope	Position	Status	Version Date
A61B-005/055			Main		"Version 7"

US Classification, Issued: 128653500, 324318000, 324322000, 333227000

File Segment: EngPI; EPI;
DWPI Class: S01; S03; S05; V02; P31
Manual Codes (EPI/S-X): S01-E02A; S01-H05; **S03-E07A**; **S05-D02B1**; V02-F01G

Original Publication Data by Authority

United States

Publication No. US 5515855 A (Update 199625 B)
Publication Date: 19960514
Dome-shaped resonator for nuclear magnetic resonance imaging and spectroscopy
Assignee: Sloan-Kettering Institute for Cancer Research (SLOK)
Inventor: Meyer, Kristen L., NY, US
Ballon, Douglas
Agent: White, John P.
Language: EN (28 pages, 15 drawings)
Application: US 1994286683 A 19940805 (Local application)
Original IPC: A61B-5/055(A)
Current IPC: A61B-5/055(A)
Original US Class (main): 128653.5
Original US Class (secondary): 324318 324322 333227
Original Abstract: A radiofrequency resonator for nuclear magnetic resonance imaging and spectroscopy of the human head in which the geometry of the resonator comprises a single end ring connected to a plurality of legs which extend along a cylinder and which are joined in pairs on a hemispherical dome.
Claim:

3. A radiofrequency resonator for nuclear magnetic resonance imaging and spectroscopy of a patient, comprising: a hollow cylindrical support structure with an outer surface, an inner diameter, an open end, and a dome-shaped closed end; an end ring conductor attached to the outer surface of the hollow cylindrical support structure adjacent the open end; sixteen substantially equal length leg conductors with respective first ends, second ends, and midpoints, each of the respective first ends being electrically joined to the end ring conductor at positions spaced substantially 22.5 degrees apart from one another, each of the sixteen leg conductors being attached to the outer surface of the hollow cylindrical support structure and each respective second end of the sixteen leg conductors terminating adjacent the dome-shaped closed end; and eight dome conductors attached to the outer surface of the dome-shaped closed end, each of the eight dome conductors having respective midpoints and two endpoints, an endpoint of each dome conductor being electrically joined to respective second ends of pairs of leg conductors spaced 112.5/247.5 degrees apart from one another, whereby each dome conductor is connected to two of said leg conductors and whereby each leg conductor is connected to one dome conductor; wherein each of said eight dome conductors intersects four of said eight dome conductors at four intersection points and wherein each of said eight dome conductors that intersect each of said four dome conductors are electrically joined to said four intersecting dome conductors at said intersection points.

25/9/1 (Item 1 from file: 2) **Links**

Fulltext available through: SPIE - The International Society of Optical Engineering USPTO Full Text Retrieval Options ScienceDirect

INSPEC

08916145 **INSPEC Abstract Number:** B2004-05-2575F-058

Title: Resistively actuated micromechanical dome resonators

Author Reichenbach, R.B.; Zalaludinov, M.K.; Aubin, K.L.; Czaplewski, D.A.; Ilic, B.; Houston, B.H.; Craighead, H.G.; Parpia, J.M.

Author Affiliation: Dept. of Electr. Eng., Cornell Univ., Ithaca, NY, USA

Journal: Proceedings of the SPIE - The International Society for Optical Engineering **Conference Title:** Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.5344, no.1 p. 51-8

Publisher: SPIE-Int. Soc. Opt. Eng ,

Publication Date: 2004 **Country of Publication:** USA

CODEN: PSISDG **ISSN:** 0277-786X

SICI: 0277-786X(2004)5344:1L.51:RAMD;1-G

Material Identity Number: C574-2004-101

U.S. Copyright Clearance Center Code: 0277-786X/04/$15.00

Conference Title: MEMS/MOEMS Components and their Applications

Conference Date: 26-27 Jan. 2004 **Conference Location:** San Jose, CA,USA

Language: English **Document Type:** Conference Paper (PA); Journal Paper (JP)

Treatment: Applications (A)

Abstract: We demonstrate dome-shaped, **radio frequency**, micromechanical resonators with integrated thermo-elastic actuators. Such resonators can be used as the frequency-determining element of a local oscillator or as a combination of a mixer and IF filter in a superheterodyne transceiver. The **dome resonators** (shallow shell segments clamped on the periphery) are fabricated utilizing pre-stressed thin polysilicon film over sacrificial silicon dioxide. The shell geometry enhances the rigidity of the structure, providing a resonant frequency several times higher than a flat membrane of the same dimensions. The finite curvature of the shell also couples out-of-plane deflection with in-plane stress, providing an actuation mechanism. Out-of-plane motion is induced by employing non-homogeneous, thermomechanical stress, generated in plane by local heating. A metal resistor, lithographically defined on the surface of the dome, provides thermal stress by dissipating 4 mu W of Joule heat. The diminished heat capacity of the MEMS device enables a heating/cooling rate comparable to the frequency of mechanical resonance and allows operation of the resonator by applying AC current through the microheater. Resistive actuation can be readily incorporated into integrated circuit processing and provides significant advantages over traditional electrostatic actuation, such as low driving voltages, matched 50-ohm impedance, and reduced cross talk between drive and detection. We show that when a superposition of two AC signals is applied to the resistive heater, the driving force can be detected at combinatory frequencies, due to the fact that the driving thermomechanical stress is determined by the square of the heating current. Thus the thermoelastic actuator provides frequency mixing while the resonator itself performs as a high quality (Q~10,000) intermediate frequency filter for the combinatory frequencies. A frequency generator is built by closing a positive feedback loop between the optical detection of the mechanical motion of the dome and the resistive drive. We demonstrate self-sustained oscillation of the **dome resonator** with frequency stability of 1.5 ppm and discuss the phase noise of the oscillator. (8 Refs)

Subfile: B

Descriptors: microactuators; micromechanical resonators; thermoelasticity

Identifiers: resistively actuated micromechanical **dome resonators**; micromechanical resonators; integrated thermo-elastic actuators; frequency-determining element; local oscillator; IF filter; superheterodyne transceiver;

mixer filter; shallow shell segments; pre-stressed thin polysilicon film; sacrificial silicon dioxide; shell geometry; finite curvature; out-of-plane deflection; in-plane stress; thermomechanical stress; local heating; thermal stress; diminished heat capacity; heating/cooling rate; AC current; integrated circuit processing; electrostatic actuation; low driving voltages; matched 50-ohm impedance; reduced cross talk; drive; detection; thermoelastic actuator; self-sustained oscillation; Si; SiO/sub 2/

Class Codes: B2575F (Fabrication of micromechanical devices); B2575D (Design and modelling of micromechanical devices); B8380M (Microactuators)

Chemical Indexing:

Si el (Elements - 1)

SiO2 bin - O2 bin - Si bin - O bin (Elements - 2)

25/9/3 (Item 3 from file: 2) **Links**
Fulltext available through: John Wiley and Sons USPTO Full Text Retrieval Options ScienceDirect
INSPEC

07268385 **INSPEC Abstract Number:** A1999-14-8760I-035, B1999-07-7510N-042
Title: A dual-tuned resonator for proton-decoupled phosphorus-31 chemical shift imaging of the brain
Author Zakian, K.L.; Koutcher, J.A.; Ballon, D.
Author Affiliation: Dept. of Med. Phys., Memorial Sloan-Kettering Cancer Center, New York, NY, USA
Journal: Magnetic Resonance in Medicine vol.41, no.4 p. 809-15
Publisher: Wiley ,
Publication Date: April 1999 **Country of Publication:** USA
CODEN: MRMEEN **ISSN:** 0740-3194
SICI: 0740-3194(199904)41:4L.809:DTRP;1-C
Material Identity Number: K620-1999-006
U.S. Copyright Clearance Center Code: 0740-3194/99/$3.00

Language: English **Document Type:** Journal Paper (JP)
Treatment: Practical (P); Experimental (X)
Abstract: A fully quadrature **dome**-shaped **resonator** is presented that has been dual-tuned for proton and phosphorus operation at 1.5 T. The resonator is 16.5 cm in length and 23 cm in diameter. Phantom studies were performed to demonstrate the utility of the resonator for proton imaging, shimming, and proton decoupled phosphorus spectroscopy. In human subjects, proton-decoupled phosphorus chemical shift imaging spectra of the brain were acquired at 27 cm/sup 3/ resolution in 34 min. Volunteer studies demonstrated improved resolution of phosphomonoesters, phosphodiesters, and nucleoside triphosphates due to proton decoupling. Sensitive coverage of the brain extended from the most superior cerebral cortex to the cerebellum. Acquisition of good quality /sup 31/P spectra over this volume is due to the dome structure as well as quadrature operation at both proton and phosphorus frequencies. (21 Refs)
Subfile: A B
Descriptors: biomedical equipment; biomedical **MRI**; brain; chemical shift; **NMR** spectroscopy; resonators
Identifiers: dual-tuned resonator; proton-decoupled phosphorus-31 chemical shift brain imaging; volunteer studies; proton imaging; shimming; proton decoupled phosphorus spectroscopy; human subjects; phosphomonoesters; phosphodiesters ; nucleoside triphosphates; cerebral cortex; cerebellum; fully quadrature **dome**-shaped **resonator**; medical diagnostic imaging; **magnetic resonance imaging**; 1.5 T; 34 min; 16.5 cm; 23 cm; P
Class Codes: A8760I (Medical magnetic resonance imaging and spectroscopy); A8740 (Biomagnetism); A8770E (Patient diagnostic methods and instrumentation); A8730 (Biophysics of neurophysiological processes); **B7510N** (Biomedical magnetic resonance imaging and spectroscopy)
Chemical Indexing:
P el (Elements - 1)
Numerical Indexing: magnetic flux density 1.5E+00 T; time 2.0E+03 s; size 1.65E-01 m; size 2.3E-01 m

25/9/4 (Item 1 from file: 5) **Links**
Fulltext available through: USPTO Full Text Retrieval Options ScienceDirect
Biosis Previews(R)

16449879 **Biosis No.:** 200200043390
Dome-shaped resonator for nuclear magnetic resonance imaging and spectroscopy

Author: Meyer K L; Ballon D
Author Address: New York, N.Y., USA**USA
Journal: Official Gazette of the United States Patent and Trademark Office Patents 1186 (2): p 917 May 14, 1996 1996
Medium: print
Patent Number: US 5515855 **Patent Date Granted:** May 14, 1996 19960514 **Patent Classification:** 128-653.5
Patent Assignee: SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH **Patent Country:** USA
ISSN: 0098-1133
Document Type: Patent
Record Type: Citation
Language: English
Descriptors:
Major Concepts: Methods and Techniques; Pathology; Public Health--Allied Medical Sciences; Radiation Biology
Miscellaneous Terms: DEVICE; DIAGNOSTIC EQUIPMENT; END RING CONDUCTOR; MEDICAL EQUIPMENT; RADIOFREQUENCY RESONATOR; SUPPORT
Concept Codes:
12504 Pathology - Diagnostic
37001 Public health - General and miscellaneous
01004 Methods - Laboratory methods
06502 Radiation biology - General